Leriche Syndrome: Treatment with Streptokinase and Angioplasty

William J. Bean,[1] Bruce A. Rodan, and Anthony L. Thebaut

Total occlusion of the lower abdominal aorta causing marked reduction of the blood supply to the pelvis and legs has been labeled Leriche syndrome. The occlusion is usually due to atherosclerotic plaques in the aorta with associated thrombus. This condition is usually treated by bypass grafts from the abdominal aorta to the common femoral arteries or by endarterectomy. Streptokinase infusion and percutaneous transluminal angioplasty (PTA) make it possible to treat this condition without surgery.

Case Report

A 55-year-old female smoker had a 4-week history of bilateral hip claudication when walking more than about 7.5 m. The pulses were not palpable in the femoral regions or distally. Pulse volume recordings (PVR) demonstrated a 60 mm Hg reduction of the systolic pressure in the right thigh compared with the arm and a 70 mm Hg drop on the left (our laboratory considers a 30 mm Hg drop to be total occlusion) and flattening of the perfusion curves bilaterally. The left common femoral artery was catheterized by the "blind" femoral

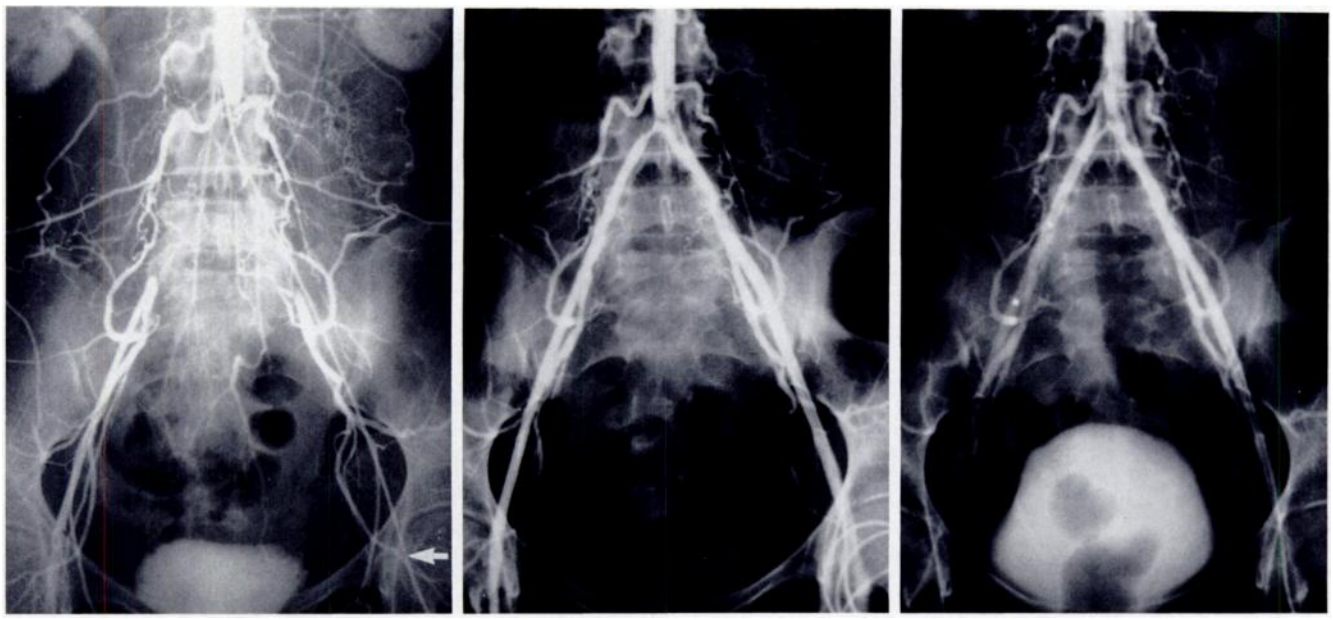

Fig. 1.—55-year-old woman with buttock claudication. **A**, Preliminary angiogram. Total occlusion of lower abdominal aorta and both common iliac arteries. Note retrograde catheter from common femoral artery traversing area of thrombosis (*arrow*). **B**, Angiogram 26 hr after streptokinase infusion. Patency of aorta and iliac arteries. Residual atherosclerotic plaques and stenoses are evident in distal aorta and proximal iliac arteries. **C**, Immediate postangioplasty angiogram. Good patency of aorta and iliac arteries.

Received October 18, 1984; accepted after revision February 28, 1985.

[1] All authors: Department of Radiology, Palm Beach-Martin County Medical Center, 1210 S. Old Dixie Hwy., Jupiter, FL 33458. Address reprint requests to W. J. Bean.

angiogram technique [1, 2]. A 1.67-mm-OD single-end-hole multipurpose catheter and a 0.89-mm J guide wire were maneuvered retrograde to the abdominal aorta. An angiogram revealed total occlusion of the lower abdominal aorta (fig. 1A).

The catheter was retracted until the tip was embedded in the thrombosis. Streptokinase was infused through this catheter for 18 hr at 5000 U/hr. A repeat angiogram demonstrated partial dissolution of the thrombus with some flow in the iliac arteries. The catheter tip was retracted into the remaining thrombus, and the infusion was continued for an additional 8 hr at the same rate. An angiogram then demonstrated complete resolution of the obstructing thrombus, with patency of the aorta and iliac arteries, and the constricting arterial plaques (fig. 1B). Temporary pain and color change occurred in the right large toe, probably due to a small part of the thrombus passing peripherally.

The infusing catheter was exchanged for a 2.3-mm balloon catheter with a 10-cm-long 6-mm-diam balloon. A second catheter with a 4-cm-long, 6-mm-diam balloon was inserted retrograde to the aorta via the right femoral artery. The two balloons were simultaneously expanded in the stenotic aorta and then retracted to dilate the common iliac arteries. An arteriogram then demonstrated adequate patency of the aorta and iliac arteries (fig. 1C). An intravenous heparin drip of 625 U/hr was administered for 24 hr after the angioplasty. The patient's walking limitation was gone when she began ambulating 6 hr after the angioplasty. The PVR study demonstrated marked improvement in the perfusion and pulse pressures throughout both legs. The patient was continued on aspirin daily and Persantine 50 mg three times a day for 3 months. Ten days after treatment, the arm/leg pressure difference was 20 mm on the right and 12 mm on the left. The patient could walk without symptoms. At 6 months, the arm/leg systolic pressure difference was 30 mm on the right. There was no pressure difference on the left side.

Discussion

Low-dose streptokinase treatment of thromboembolic disease of arteries has been advocated by numerous authors to open arteries that would otherwise require surgical intervention [3]. It has even been shown that chronic arterial occlusion can be treated by this technique [4]. Streptokinase therapy should be considered as a treatment for Leriche syndrome. The retrograde catheter placement in the presence of a suspected total occlusion of the aorta and the use of streptokinase were considered in our case because the final occluding thrombus was recent and thus still soft.

A second case was successfully catheterized in a retrograde manner, and the occluding thrombus was dissolved with streptokinase. However, the extent of the underlying atherosclerosis made it more advisable to do bypass surgery rather than angioplasty.

The indications and mechanisms of action of streptokinase therapy and PTA in relieving arterial obstruction have been well described [5–7]. We believe these two methods are complementary for the treatment of Leriche syndrome, and in selected cases will save the patient the significant morbidity and mortality of surgical bypass procedures.

REFERENCES

1. Lynch WA, Westcott JL. "Blind" femoral angiography. *Radiology* **1977**;125:379–382
2. Dotter CT, Rösch J, Robinson M: Fluoroscopic guidance in femoral artery puncture. *Radiology* **1978**;127:266–267
3. Katzen BT, van Breda A. Low dose streptokinase in the treatment of arterial occlusions. *AJR* **1981**;136:1171–1178
4. Berkman WA, White RI Jr, Parandian BB. Lysis of a chronic arterial occlusion with streptokinase. *AJR* **1983**;141:403–404
5. Mori KW, Bookstein JJ, Heeney DJ, et al. Selective streptokinase infusion: clinical and laboratory correlates. *Radiology* **1983**;148:677–682
6. Velasquez G, Castaneda-Zuniga W, Formanek A, et al. Nonsurgical aortoplasty in Leriche syndrome. *Radiology* **1980**;134:359–360
7. Kumpe DA. Percutaneous dilatation of an abdominal aortic stenosis. *Radiology* **1981**;141:536–538